

The Secretary exhibited a round bar of cast phosphorus-bronze, left for that purpose in his care by Mr. Hector Orr, who reported it broken under a tensile strain of 63,000 lbs. to the square inch. Its diameter at the place of fracture was slightly diminished.\*

Mr. Marsh read a communication, illustrated by diagrams, entitled, "The Luminosity of Meteors due to Latent Heat."

Pending nominations Nos. 745 to 747, and new nominations 748, 749, were read.

And the meeting was adjourned.

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*Stated Meeting, March 20th, 1874.*

Present, 12 members.

Vice-President, Mr. FRALEY, in the Chair.

A letter accepting membership was received from Dr. Hermann Kolbe, dated Leipzig, Feb. 15th, 1874.

Letters acknowledging the receipt of Proceedings were received from Dr. Renard and the Public Museum at Moscow, June 26, 1872, Jan. 1, 1871 (86); Dr. Stralkowski, St. Petersburgh, July 1st, 1872 (86); Prof. A. Braun, Neuschönbron, Berlin, Oct. 12th, 1873 (88, 89); the R. S. Upsal, Nov., 1873 (86, 87, 88, 89); the N. H. S., Emden, Oct. 15, 1873 (88); Prof. Sandberger, Würtzburg, Nov. 12th, 1873 (88, 89); the Münich Observatory, Dr. W. V. Lamont, Dec. 6, 1873 (88, 88); R. Library, Münich, Jos. Aumer, Dec., 1873 (88, 89); R. Soc., Göttingen, Oct. 4th, 1873 (88, 89); N. H. Ass., Bremen, Oct. 31, 1873 (88, 89); Prof. Loomis, N. Haven, March 14th, 1874 (90, 91); N. Y. Hist. Soc., G. H.

\* Original diameter of bolt (circular) .75 inch; original area, .4417 in.; reduced area at breaking point, .3067 in.; strain on bolt at breaking, 19,550 lbs. = 63,100 lbs. per square inch. Alloy of tin 10, copper 90, less phosphorus, which is found to give useful properties within the limits of 2.5 and 0.1 per cent.

Moore, March 14th, 1874 (91); and many postal card receipts for 91, the number recently published.

Letters of envoy were received from the R. S., Upsal, Nov., 1873; the I. Acad., Vienna, Oct. 21st, 1873; the R. Library at Münich, Dec., 1873; the S. P. et H. N., Geneva, Sept. 15th, 1873; U. S. Naval Obs., B. F. Sands, Feb. 21st, 1874; C. P. Obs., St. Petersburg, Jan., 1874.

A letter requesting a set of Proceedings was received from the Silesian Society for Fatherland Culture, Breslau, March 5th, 1873.

A letter with three photographic pictures of Indian sculpture was received from Dr. C. H. Stubbs, Wakefield, Pa., purchased by the Society.

"These pictures are taken from the northern face of a rock in the Susquehanna River, near Bald Friar, Md., on which are more than a hundred characters, diagrams, or figures, supposed to have been carved during the stone age. The rock is of quartz, mica, and anthophyllite. Dimensions of figures  $12 \times 6$  and  $10 \times 6$  inches. Photographed in July, 1871. Sets in the Maryland Academy of Science, Lancaster Linnæan Society, and Philadelphia Academy of Natural Sciences."

Donations for the Library were received from the R. Obs., Turin; Mun. Govt. at Linz; R. Acad. and Obs., Münich; J. Acad., Berlin; R. S. Melbourne; Geog. S., Paris; Revue Pol.; London Nature; Mr. W. J. Henwood, Truro; the American Acad., Boston; Franklin Institute; Acad., N. S.; Am. Chemist; Medical News; U. S. N. Obs.; Wisconsin Acad. Sciences; and Minnesota Historical Society.

The death of Charles Sumner, Senator U. S., at Washington, March 12th, aged 63, was announced by the Secretary.

The death of M. C. Quetelet, père, at Brussels, Monday, Feb. 16th, 1873, aged 77, was announced by the Secretary.

Prof. Cope communicated some facts revealed by Lieut. Wheeler's last year's explorations on the 100th meridian, in the valley of the great Colorado, and described some new types of living fish belonging to the fresh-water family of Cyprinidæ, and characterized by a great development of the

predorsal fin spine, a double spine, not co-ossified. Three new types were described, two of them naked of scales, and the third covered only with rudimentary scales.

Prof. Cope communicated a short note entitled, "On the Zoölogy of a Temporary Pool on the Plain of Colorado."

Mr. Blasius, of Philadelphia, present by invitation, exhibited maps and pictures of the tornado of August 22d, 1851, in Cambridge and Medford, Mass., and described his survey and study of the same, the impossibility of applying Redfield's theory except to its central, and Espy's to its ultimate track; for the initial division another explanation was requisite. This led him to the study of the general phenomena attendant upon the meeting of the equatorial and boreal currents, the determination of the shape of land and ocean gales, the use of clouds and their shapes and positions for indicating the nature and position of approaching storms, and the construction of practical sailing directions for vessels in danger.

Mr. Briggs said that he happened to see the tornado referred to, and gave an account of its aspect, effects, and the part of the track which he afterwards examined, by which he was led to the conviction that it was locally determined, like other similar storms, by the low ground of Charles River, heated to an unusually high temperature in a calm day.

Mr. Lesley replied that the constant eastward movement of these tornados, and their sometimes immense length, together with their well known repeated occurrence along the same lines of country, proved them items of an extensive system of physical conditions in the atmosphere on the shifting line of meeting of the equatorial and polar currents, as Mr. Blasius had so well described, and that he hoped the acknowledged defects of the present tornado sailing directions would be corrected by those indicated by the theory of Mr. Blasius.

Pending nominations Nos. 745 to 749, and new nominations 750, 751, were read.

And the meeting was adjourned.